

IN THE CLAIMS:

1. (Currently amended) A phosphorus- and metal components-containing MFI-structured molecular sieve having a formula expressed in an anhydrous form and on ~~the~~ a basis of oxide weight, as follows:
(0~0.3) Na₂O (0.5~5.5) Al₂O₃ (1.3~10) P₂O₅ (0.7~15) M₁_xO_y (0.01~5) M₂_mO_n (70~97) SiO₂, wherein M₁ is ~~one of metals~~ a metal selected from the group consisting of Fe, Co, and Ni; x represents ~~the~~ an atom number of M₁; y represents a number required by ~~the~~ an oxidation state of M₁; M₂ is ~~one~~ selected from the group consisting of Zn, Mn, Ga, and Sn; m represents ~~the~~ an atom number of M₂; and n represents a number required by ~~the~~ an oxidation state of M₂.

2. (Currently amended) The molecular sieve ~~according to~~ of claim 1 having a formula expressed in ~~an the~~ anhydrous form and on the basis of oxide weight as follows: (0~0.2) Na₂O (0.9~5.0) Al₂O₃ (1.5~7) P₂O₅ (0.9~10) M₁_xO_y (0.5~2) M₂_mO_n (82~92) SiO₂.

3. (Currently amended) The molecular sieve ~~according to~~ of claim 1 ~~or 2~~ wherein ~~said~~ M₁ is Fe and M₂ is Zn.

4. (Currently amended) The molecular sieve ~~according to~~ of claim 1 ~~or 2~~ wherein ~~said~~ M₁ is Fe and M₂ is Mn.

5. (Currently amended) The molecular sieve ~~according to~~ of claim 1 ~~or 2~~ wherein ~~said~~ M1 is Fe and M2 is Ga.

6. (Currently amended) The molecular sieve ~~according to~~ of claim 1 ~~or 2~~ wherein ~~said~~ wherein said M1 is Fe and M2 is Sn.

7. (Currently amended) The molecular sieve ~~according to~~ of claim 1 ~~or 2~~ wherein ~~said~~ M1 is Co and M2 is Mn.

8. (Currently amended) The molecular sieve ~~according to~~ of claim 1 ~~or 2~~ wherein ~~said~~ M1 is Ni and M2 is Mn.

9. (Currently amended) The molecular sieve of claim 1 which is a ZSM-5 molecular sieve.

10. (Currently amended) ~~Use of the molecular sieve of any one of claims 1-9 as a shape-selective active component in catalysts or additives~~ A catalyst or additive for catalytic cracking of petroleum hydrocarbons comprising a molecular sieve of claim 1 as a shape-selective active component.

11. (Currently amended) A process for preparing a phosphorus- and metal components-containing MFI-structured molecular sieve according to ~~any one of~~ claims claim 1 to 9, characterized by the steps of:

ion-exchanging ~~the~~ an Na-type molecular sieve having a MFI structure in a weight ratio of molecular sieve:ammonium salt:H₂O=1:(0.1~1):(5~10) at a temperature from room temperature to 100°C for 0.3~1 hours;

filtering;

introducing phosphorus, and transition metals M1 and M2 to modify the molecular sieve, wherein M1 is ~~one of metals~~ a metal selected from the group consisting of Fe, Co, and Ni, and M2 is ~~one of metals~~ a metal selected from the group consisting of Zn, Mn, Ga, and Sn; and calcining at 400-800°C for 0.5~8 hrs.

12. (Currently amended) A The process ~~according to~~ of claim 11 wherein said calcining step is carried out under a water vapor atmosphere.

13. (Currently amended) A The process ~~according to~~ of claim 11 wherein said modification is carried out by impregnating or ion-exchanging.

14. (Currently amended) A The process ~~according to~~ of claim 13 wherein said step of introducing phosphorus, and transition metals M1 and M2 to modify the molecular sieve is carried out by ~~stirring~~ stirring homogeneously the ammonium-exchanged filter cake with an aqueous solution having a calculated amount of a phosphorus-containing compound at a temperature from room temperature to 95°C, oven-drying the resultant slurry, calcining the dried solid at 400~800°C, then mixing homogeneously the calcined solid with an aqueous solution having a calculated amount of a compound containing metal M1 and a compound containing metal M2 at a temperature from room temperature to 95°C, and oven-drying the resultant mixture.

15. (Currently amended) A The process ~~according to~~ of claim 13 wherein said step of introducing phosphorus, and transition metals M1 and M2 to modify the molecular sieve is carried out by ~~stirring~~ stirring homogeneously the ammonium-exchanged filter cake with an aqueous solution having a calculated amount of a phosphorus-containing compound at a temperature from room temperature to 95°C, oven-drying the resultant slurry, calcining the dried solid at 400~800°C, then mixing homogeneously the calcined solid with an aqueous solution having a calculated amount of a compound containing metal M1 at a temperature from room temperature to 95°C, and oven-drying the resultant mixture; calcining the dried solid at 400~800°C, ~~finally~~ and mixing homogeneously the calcined solid with an aqueous solution having a calculated amount of a compound containing metal M2 at a temperature from room temperature to 95°C, and oven-drying the resultant mixture, wherein the two metal components to be supported ~~may~~ can be ~~also~~ added in a ~~reversed sequence~~ any order.

16. (Currently amended) A The process ~~according to~~ of claim 13 wherein said step of introducing phosphorus, and transition metals M1 and M2 to modify the molecular sieve is carried out by ~~stirring~~ stirring homogeneously the ammonium-exchanged filter cake with an aqueous solution having a calculated amount of a phosphorus-containing compound at a temperature from room temperature to 95°C, oven-drying the resultant slurry, then mixing homogeneously ~~it~~ with an aqueous solution having a calculated amount of a compound containing metal M1 and a compound containing metal M2 at a temperature from room temperature to 95°C, and oven-drying the resultant mixture, wherein the two metal components to be supported ~~may~~ can be ~~also added in a reversed sequence~~ any order.

17. (Currently amended) A The process ~~according to~~ of claim 13 wherein said step of introducing phosphorus, and transition metals M1 and M2 to modify the molecular sieve is carried out by ~~stiring~~ stirring homogeneously the ammonium-exchanged filter cake with an aqueous solution having a calculated amount of a phosphorus-containing compound at a temperature from room temperature to 95°C, oven-drying the resultant slurry, then mixing homogeneously ~~it~~ with an aqueous solution having a calculated amount of a compound containing metal M1 at a temperature from room temperature to 95°C, and oven-drying the resultant mixture; and ~~finally~~ mixing homogeneously ~~it~~ with an aqueous solution having a calculated amount of a compound containing metal M2 at a temperature from room temperature to 95°C, and oven-drying the resultant mixture, wherein the two metal components to be supported ~~may~~ can be also added in a ~~reversed sequence~~ any order.

18. (Currently amended) A The process ~~according to~~ of claim 13 wherein said step of introducing phosphorus, and transition metals M1 and M2 to modify the molecular sieve is carried out by ~~stiring~~ stirring homogeneously the ammonium-exchanged filter cake with an aqueous solution having a calculated amount of a phosphorus-containing compound, a compound containing metal M1, and a compound containing metal M2 at a temperature from room temperature to 95°C, and oven-drying the resultant slurry.

19. (Currently amended) A The process ~~according to~~ of claim 13 wherein said step of introducing phosphorus, and transition metals M1 and M2 to modify the molecular sieve is carried out by ~~stirring~~ stirring homogeneously said ammonium-exchanged filter cake with an aqueous solution having a calculated amount of a phosphorus-containing compound at a temperature from room temperature to 95°C, oven-drying the resultant slurry, calcining the dried solid at 400~800°C, and after mixing homogeneously the calcined solid with an aqueous solution having a calculated amount of a compound containing metal M1 and a compound containing metal M2 in a solid:liquid ratio of 1:(5 ~ 20), stirring the resultant mixture at 80~95°C and pH 4-7 for 2~3 hours, ~~and~~ then filtering the mixture, wherein the ion-exchange ~~may~~ can be repeated ~~for many a~~ a plurality of times, and the exchanged sample ~~may~~ can be washed with water ~~for many a~~ a plurality of times before oven-drying the washed sample.

20. (Currently amended) A The process ~~according to any one of elaims 14 to 19~~ claim 11 wherein ~~said the~~ the phosphorus is introduced using a phosphorus-containing compound ~~is one~~ selected from the group consisting of phosphoric acid, ammonium hydrogen phosphate, ammonium dihydrogen phosphate or ammonium phosphate, ~~or~~ and a mixture thereof.

21. (Currently amended) A The process ~~according to any one of elaims 14 to 19~~ claim 11 wherein said ~~compound containing~~ metal M1 and said ~~compound containing~~ metal M2 are ~~selected from their~~ introduced as water soluble salts.

22. A The process ~~according to~~ of claim 21 wherein said water soluble salts are ~~one~~ selected from the group consisting of sulfate, nitrate, and chloride ~~salt~~ salts.